# 'Spice', 'Meow Meow', 'Kriptonite', 'Black Mamba': an overview of brand names and marketing strategies of novel psychoactive substances on the Web

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**ABSTRACT**

**Introduction:** Novel Psychoactive Substances (NPS) are often sold online as 'legal' and 'safer' alternatives to International Controlled Drugs (ICDs) with captivating marketing strategies. Our main aim is to review and summarize such strategies in terms of (i) the appearance of the products, (ii) the brand-names and (iii) the latest trends in the illicit online marketplaces.

**Methods:** Scientific data were searched in PsychInfo and Pubmed databases; results were integrated with an extensive monitoring of Internet (websites, online shops, chat-rooms, fora, social networks) and media sources in 9 languages (English, French, Farsi, Portuguese, Arabic, Russian, Spanish, and Chinese simplified/traditional) available from secure databases of the Global Public Health Intelligence Network.

**Results:** Evolving strategies for the online diffusion and the retail of NPS were identified, including discounts and periodic offers on chosen products. Advertisements and new brand names have been designed to attract customers, especially young people. An increased number of retailers were recorded as well as new web platforms and privacy systems .

**Discussion:** NPS represent an unprecedented challenge in the field of public health with social, cultural, legal and political implications. Web monitoring activities are essential for mapping the diffusion of NPS and for supporting innovative web-based prevention programmes.

## 1. INTRODUCTION

Novel Psychoactive Substances (NPSs), also known as 'designer drugs', 'herbal highs', 'research chemicals' and 'legal highs', comprise an ever-increasing number of chemical, pharmaceutical and herbal drugs often advertised as 'legal' and 'safer' alternatives to International Controlled Drugs (ICDs) (Corazza et al., 2013); NPS may share with ICDs common ways of consumption (e.g. ingestion, inhalation, injection) and pharmacological properties, but they are often more powerful and harmful (Vardakou et al. 2010).

While the use of ICDs generally seems to have stabilized over the past decades (EMCDDA, 2013), the market of NPSs has significantly grown (INCB 2013) representing an unprecedented challenge in the field of global public health. The international drug control system is floundering, for the first time, under the spread of this new phenomenon; the EU Early Warning System (EWS) of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) has officially reported the apparance of 24 NPS in 2009, 41 in 2010, 49 in 2011 and 73 in 2012 (EMCDDA 2013).

According to the World Drug Report 2013 of the United Nations Office on Drugs and Crime the rapid diffusion of NPS is widespread in 70 countries and territories. For instance, excluding cannabis, in the USA the use of NPS among students is more widespread than the use of any other drug and appears to be more than twice as widespread as in the European Union (UNODC, 2013). Within Europe, Eurobarometer data suggest that five countries account for almost three-quarters of all users of NPS: United Kingdom (23 per cent of the European Union total), followed by Poland (17 per cent), France (14 per cent), Germany (12 per cent) and Spain (8 per cent) (Eurobarometer, 2011). Overall, close to 5 per cent of people aged 15-24 (2.9 million people) have already experimented with NPS in the European Union, which is equivalent to one-fifth of the numbers who have tried cannabis and close to around half of the number who have used drugs other than cannabis. The emergence of NPS has also been reported in East Asia, Middle East, Oceania, South America and several African countries (UNODC, 2013).

Over the past few years there has been increasing recognition from the EMCDDA (2013), the International Narcotics Control Board (INCB 2013), the governments and international regulatory bodies (e.g. ACMD, 2011), the scientific community (Butler et al. 2007; Cone 2006; Hoover et al. 2008; Schifano et al. 2009; Minichino et al. 2013; Corazza et al 2012) as well as the public and media (e.g. Jack, 2009; Townsend, 2010) of the major role that the Internet is now playing in shaping the recreational NPS market. Various surveys and studies have shown that the Internet is the most popular source of information about illicit drugs and their use and that this information is often biased and potentially inaccurate (Schifano et al., 2006; Deluca et al., 2007; Corazza et al. 2014). In this rapid change of drug scenarios, the Internet seems to play a central role in the NPSs business more than it does in the illicit ICDs business (INCB 2013; Bersani et al. 2014).

The number of online shops offering NPS products for sale in European Union countries increased from 170 in January 2010 to 314 in January 2011 and 693 in January 2012 (EMCDDA 2012). The characteristics of the websites selling these products (e.g. access 24 hours a day, a virtually unlimited number of products available, privacy guaranteed both to retailers and customers, periodic discounts and alerts on new items), provide a constant dynamism of the market with daily new products and advertisements. The competitive conditions of a substantially unregulated market has led so far to more aggressive advertising campaigns among NPS online retailers in order to attract a larger number of customers. who may be easily manipulated by misleading and false claims.

The aim of the present manuscript was to review and summarize some aspects of the strategies adopted by online NPS retailers: (i) the appearance of the products, (ii) the brand-names and (iii) the latest trends in the illicit online marketplaces.

## 2. METHODS

The literature on NPSs online marketing strategies was searched in PsychInfo and Pubmed databases. Considering the limited peer-reviewed data, results were integrated with an extensive and

regular monitoring of the Internet (i.e., websites, online shops, chat-rooms, newsgroups, fora, eBay, YouTube, Facebook, Twitter, Google Insights for Search) carried out in 4 languages (English, German, Spanish, Italian) with respect to NPS online marketing strategies. More than 100 websites were monitored on a regular basis depending on relevance. A list of 20 key resources monitored is reported in table 1.

Additional searches were carried out in the database provided by the Global Public Health Intelligence Network (GPHIN). This is a secure Internet-based early warning system that gathers preliminary reports of public health significance by monitoring global media sources in near 'real-time', 24 hours a day, 7 days a week basis. GPHIN is developed by Canada's Public Health Agency, and is part of the World Health Organization's (WHO) Global Outbreak and Alert Response Network (GOARN); it monitors news sources and websites across the globe in 9 languages (e.g. English, French, Farsi, Portuguese, Arabic, Russian, Spanish, and Chinese simplified/traditional) (Keller et al. 2009).

Permission for the study was granted by the School of Pharmacy Ethics Committee, University of Hertfordshire, Hatfield, UK (November 2013; PHAEC/10-42)

## 3. RESULTS

### 3.1. Appearance of NPS and packaging

The main feature of online marketing strategies developed by NPS retailers is to present the advertised products as legal and safer alternatives to traditional ICDs (Corazza et al 2012; Bersani 2002). By doing so, the potential risks associated with the consumption of NPS are minimized and the presence of psychoactive ingredients is often disguised as not listed on the packaging (Schifano et al 2009). Products are often advertised online as ‘something else’ (e.g. ‘herbal mixtures’, ‘party pills’, ‘bath salts’, ‘incenses’, ‘fruit jakes’, ‘Halloween candies’, ‘fertilizers’, ‘perfumes’, ‘pound cleaners’) and thus less noticeable as drugs. Moreover, the explicit references to their legality affect

the users' perception on the real content. In fact, the idea that legality can equate with safety still remains a common misbelief amongst some recreational users (Corazza et al. 2011).

As in the case of "Spice drugs" (Schifano et al 2009), herbal compounds are frequently sold in colorful packages designed to appeal to vulnerable consumers, mainly adolescents and young adults.

Compounds sold as pills, in addition to a variety of colors, are often characterized by particular imprints; trademarks like Louis Vitton, Facebook, Sky, Apple, Rolex, McDonald's, Mitsubishi have been found (Kraner et al. 2001). Some of these have given inspiration for new brand names such as 'Green Rolex', 'Green Apple', 'Pink McDonald's' or 'Red Mitsubishi'. These pills mainly contain the empathogenic substance MDMA (3,4-methylenedioxy-*N*-methylamphetamine; 'Ecstasy') or PMA (para-methoxy-amphetamine); PMA is a serotonergic substance of the amphetamine class, with psychedelic and antidepressant properties; it first came into circulation in the early 1970s, when it was used as an alternative to LSD for its hallucinogenic effects. Since the 70s it caused more than 90 deaths in Canada, USA, Australia and Europe (Vevelstad et al. 2012), mostly related to the consequences of acute temperature elevation (hypertemia) leading to multi-organ failure occurring at dosages only slightly above the usual recreational range.

In the case of NPS sold as powders, the term 'bath salts' is frequently used in order to give the appearance of legality, taking inspiration from the white crystals often resembling bathing products; they are also sometimes called 'jewelry cleaners', 'plant foods' or 'phone screen cleaner'. Usually these substances contain synthetic cathinones, such as mephedrone, whose psychostimulant effects are similar to cocaine and amphetamines. Diffusion of mephedrone reached extremely high levels of popularity among clubbers (Wood, Greene & Dargan 2011) and its abuse is secondary only to cocaine. The popularity of mephedrone has been associated with a decreasing availability/purity of both MDMA and cocaine (Schifano et al. 2011). Mephedrone has been implicated in a number of deaths, especially in UK, and in 2010 it has been banned in several European countries (Mas-Morey et al. 2013).

### 3.2. NPS brand names

A comprehensive analysis of more than 1,000 brand names used to advertise NPS online has been carried out (table 2). To our knowledge this is the most extensive overview of NPS brand names; however, some limitations related to the extreme volatility of the online market should be highlighted: a) NPS are rapidly re-branded; b) a single brand name often identifies different NPS in different countries; and c) often a single brand name identifies various NPS in different times (Ramsey et al. 2010; Davies et al. 2010). Therefore, the collected data do not allow a statistical analysis aimed to investigate selection criteria of the brand names.

Overall, neither the broad categories nor the brand names are representative of the actual contents of the products (Brandt et al. 2010). The present research suggests that the strategies of choice of brand names are carefully designed to attract customers, especially teenagers, minimizing the possible risks derived from their consumption and maximizing the wanted 'highs'. In this context, names referring to popular movies, comics, animals or landscapes are frequently used (examples are given in table 3)

In relation to movies, the brand 'Black Mamba' referring to the character interpreted by Uma Thurman in Quentin Tarantino's Kill Bill has become very popular among young people (Musshoff et al. 2013). This product contains the synthetic cannabinoid AM-2201, and it has been banned in 2013 in various countries (Lesiak et al. 2013); as a result of the ban, related cannabimimetic drugs such as 5F-AKB48, rebranded as 'Clockwork Orange' as Stanley Kubrick's movie, have recently reached equal popularity (Drug Enforcement Administration 2013).

In relation to cinema, the NPS 'Mad Alice' recalls Alice in Wonderland and the NPS 'Charlie Sheen' relates to the famous American actor. 'Mad Alice' is an herbal blend containing Turnera Diffusa (Estrada-Reyes et al. 2009) and Lactuca Virosa (Besharat S, Besharat M & Jabbari, 2009) with aphrodisiac and psychedelic properties; the product 'Charlie Sheen' initially contained the synthetic cathinone 3,4-methylenedioxypyrovalerone (MDPV) and since 2012 the psycho-

stimulants methiopropamine and ethylphenidate (Welter et al. 2013; Zhu, Patrick & Markowitz 2011).

Among the brand names related to comics, references to characters from the Marvel and DC comics have been recorded. For instance, the products called 'Krypton' and 'Kryptonite' emerged from our searches. 'Kripton' stands for the opiod O-Desmethyltramadol (O-DT) (Arndt et al. 2011), linked to various fatalities from overdose during 2010–2011 (Kronstrand et al. 2011). On the other hand, 'Kyptonite' can contain both synthetic cannabinoids or lysergic acid amide (LSA), a compound closely related to lysergic acid diethylamide (LSD); in this latter case, retailers advice customers to '*Keep Kryptonite out of reach of children and Superman!*' (Azarius online smartshop 2013).

In relation to animals, the most particular brands are 'Meow Meow' and 'Woof Woof'. 'Meow Meow' refers to mephedrone (Wood et al. 2012); conversely, 'Woof Woof' refers to 5,6-Methylenedioxy-2-aminoindane (MDAI), a substance with entactogenic properties. When mephedrone was banned in the UK in April 2010, MDAI has been introduced to the market as legal and safe alternative to 'Meow Meow' (Gallagher et al. 2012); in the UK three deaths involving MDAI in 2011 and 2012 have been reported (Corkery et al. 2013).

Brand names related to landscapes (e.g. 'K2', 'Yucatan fire') and cyberspaces (e.g. 'moon rocks', 'lunar wave') are also common. Others include brand names referring to the expected psychedelic effects of chosen products (e.g. 'Dr. feel good', 'lover's speed') or to specific physical side effects as in the case of 'Seven Monther', a brand name for Tropicamide eye drops indicating "the amount of time (e.g., 7 months) that the it takes to kill" (Bersani et al. 2013).

### 3.3. Evolution of the NPS online marketplaces

Although NPS can be available on local head-shops, the Internet plays a crucial role in the distribution of these products. This has become a highly profitable business as it provides a number of advantages including vast pools of customers, swift and easy operational management,

anonymity, while overcoming national and international legislations (Corazza et al., 2013). Businesses are advertised on websites, Youtube videos, social networks (Instagram, Facebook, Twitter) as well as drug-fora, which are crucial to favour exchange of information and promotion of the latest products. Alerts on the latest deals are often sent via SMS and emails also to non-registered users (Davey et al. 2012).

Among the most popular selling websites, Silk Road deserves the denomination of the 'Amazon.com of illegal drugs' or the 'eBay for drugs' (Hout & Bingham 2013; Barratt 2012). Until it was seized and shut down by Federal Bureau of Investigation (FBI) in October 2013 (Konrad 2013), it operated as a Tor hidden service for the distribution of ICDs as well as NPSs, but also child pornography, stolen credit cards and weapons (Dasgupta et al. 2013). It has been estimated that approximately 220 distinct categories of illicit drugs were sold on this website (Hout & Bingham 2013). These were able to generate annual sales worth $22 million (£14.5million), Forbes reported (Greenberg 2013).

However, the largest business we were able to identify so far is related to Performance and Imaging Enhancing Drugs (PIEDs), an umbrella term used to describe a variety of substances taken to enhance human abilities and capabilities. More specifically, PIED drugs include: (a) anabolic drugs such as steroid supplements, used to enhance muscle growth and which were very popular among athletes in the '80s; (b) opioid analgesic drugs (e.g. codeine, tramadol), which are used for pain relief and muscle relaxant; (c) image-enhancing drugs taken to change weight, skin coloration, promote/stop hair-loss, as well a variety of beauty and anti-aging products; (d) cognitive enhancers such as Adderall, Modafinil, Piracetam; (e) products labelled as sleep inducers and antidepressant drugs, including prescription drugs (such as benzodiazepines); (f) 'sex drugs' and aphrodisiacs, which include prescription drugs (e.g. sildenafil) (Evans-Brown et al. 2012; Corazza et al., 2014).

Illicit manufacturers and retailers have developed specific marketing strategies to sell these products, including prescription medicines, via online pharmacies (Ops) at discounted prices and without prescription (Corazza et al. 2013). Ops, in fact, are able to attract a wider range of

customers who remain unaware that the products could contain untested or illicit substances and might lead to allergic reactions, liver damage, mercury poisoning, brain damage and sometimes death (Evans-Brown et al. 2012).

Cultural differences on the ways these products are advertised online have also emerged form our searches. For instance, Bigdeli et al have recently shown how NPS in Iran and the Middle East are available in occult and concealed manners on public and legal websites such as real estates or general supplies (Bigdeli et al., 2013).

## 4. DISCUSSION

Internet represents an integral part of daily lives. Far from being merely a virtual place for information exchange, as conceived originally, it has become a means for accessing services and goods via 'e-commerce' (Gelatti et al. 2013). The sale of NPS has not been excluded from this revolution.

In this context of sudden change, a major challenge remains the lack of reliable scientific evidences, which develop too slowly in comparison with the rapid evolution of the drug scenario; in other words, the business driven NPSs online market is by far more rapid than scientific research. For this reason, web-based activities represent a prompt response for a better understanding of new ongoing drug trends as well as the provision of preliminary information to professionals working in the field and general public (Deluca et al 2012). Further, as it has recently been demonstrated by the European Union-funded ReDNet project (Corazza et al 2013), it is crucial that prevention strategies include health messages to users/potential users via online information and communication technologies (ICTs). Consistently with this idea, Ridout & Campbell (2014) have recently performed a study where Facebook was used to deliver positive messages about safe alcohol use to students and Free et al (2010) summarised the evidences for the effectiveness of mobile web technology interventions for improving health outcomes around the world.

The present study covers some specific aspects associated with the diffusion of the NPS and further studies are required. The main limitation of our investigation is intrinsic to the nature of the Internet and the Web sources monitored: the information available online is continuously changing, and our data refers to products, which were available until December 2013. It is suggested that monitoring activities should be continued; that more countries, languages, resources, researchers and health professionals should be involved, and that the findings should be widely shared with public health agencies and health professionals for responding to such a prominent challenge. Large-scale clinical studies are also warranted to confirm and better describe the extent of NPS phenomenon and to develop effective strategies to clinically address it.

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**Declaration of Interest**

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article

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